

Design & Access Statement

Solar PV Installation Shed 5

D. R. Collin & Son Ltd, Eyemouth, Scottish Borders

D R Collin & Son Ltd

Site 5

Industrial Estate, Unit 1 Coldingham Rd, Eyemouth TD14 5AN

Brief

This design & access statement is meant to inform the reader of the size, scale, form and policies that have been considered by the applicant when applying for planning permission.

Prepared by	Date	Signature
Simon Maden Bsc Build. Surv.		



Applicant

D. R. Collin & Son Ltd
Unit 1 Industrial Estate,
Coldingham Road,
Eyemouth,
Berwickshire,
TD14 5AN, Scotland

Agent

Maden Eco Ltd
Eco House
Kings Mount
Ramparts Bs Pk
Berwick upon Tweed
Northumberland
TD15 1TQ

Tel: 01289 333110

Contact: Simon Maden BSc Build. Surv. 07801 634632

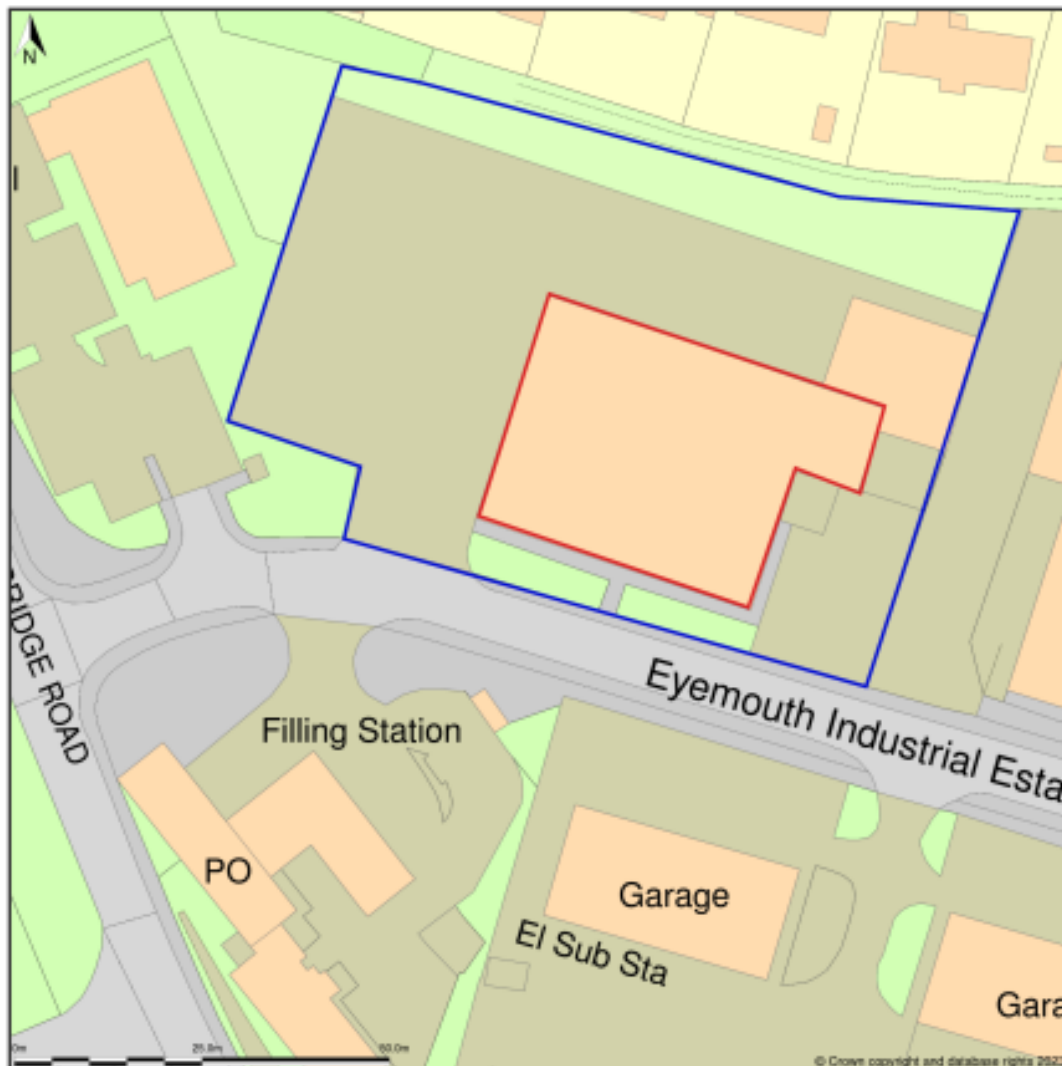


Grid Reference: NT 93891 64126

Grid reference (6 figure): NT938641

Easting X: 393891

Northing Y: 664126



Scope of Works

The applicant D. R. Collin & Son Ltd is applying for Planning Permission to install solar photovoltaic panels (PV) on the roof on Shed 5.

1.0 Existing site



2.0 Use

The intended use of the application is that of a solar pv installation to reduce the amount of bought in power and move to self-generated power for the site.

3.0 Scale

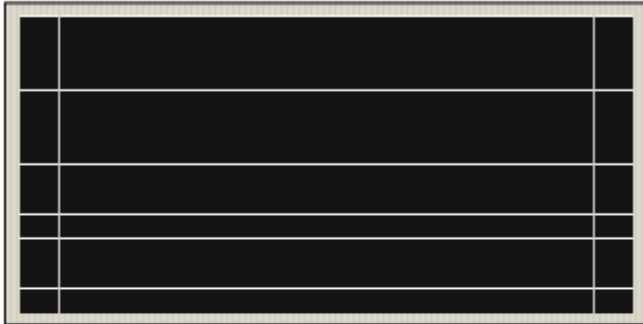
Existing Site Electricity Consumptions

SHED	DAYTIME	TOTAL
5 1800035328241	233,284kwh	326,693kwh

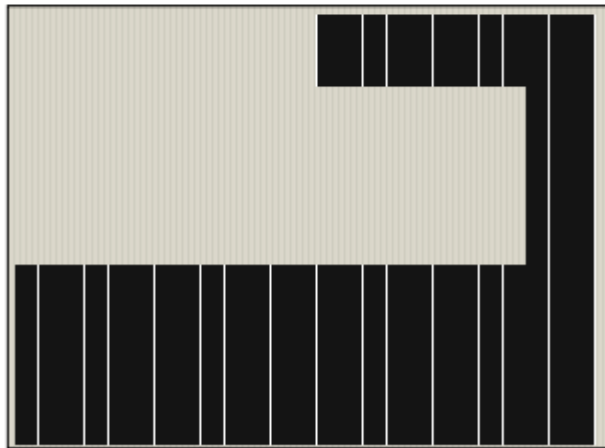
4.0 Amount

Based on the findings in the scale of the project we are able to design an amount of solar to have the maximum effect on that energy demand.

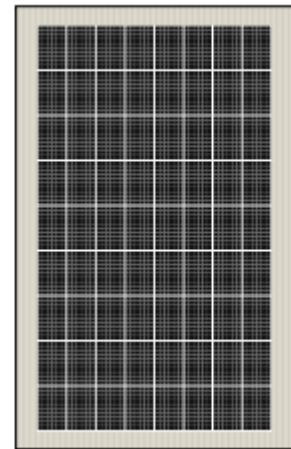
Roof 1



Roof 2



Roof 3



We can confirm that we have designed the following System:

475 Trina Vertex S 425W Black Framed Mono (White Backsheet) solar panels.

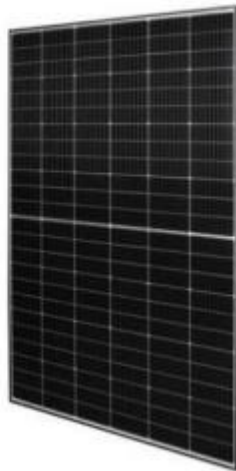
The panels will be connected to 1 Growatt 80KTL3 3ph inverter and 1 Growatt MAX 100KTL3 inverter.

Total Installed capacity 200kW

This will generate approximately 150,000 kWh of energy which will be consumed by the plant and surplus exported to the grid and consumed by local business and households on the same local network. This is a saving of 28,992 kgCO₂e/pa

Given the presence of birds in the area, an option to consider may be to include an edging to the panels to prevent birds nesting beneath the panels.

Data on panel to be used.



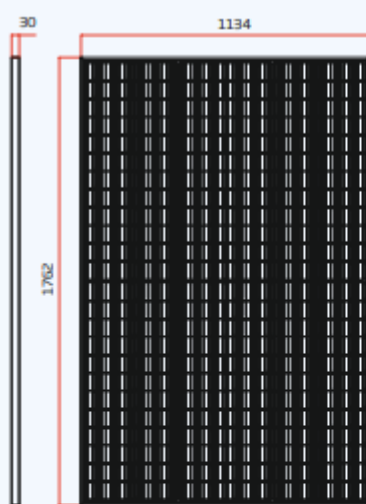
Trina Solar 425W Black Frame / White Backsheet Solar PV Panel

Part Code: **DE09.08R**
 Stock Code: **2745-3763**

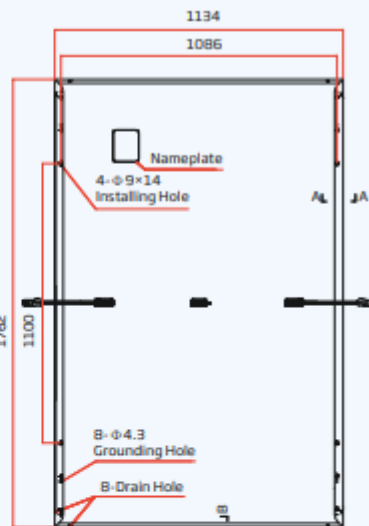
 No reviews

- 144 half cell modules [6 x 24]
- 0.55% Annual degradation over 25 years
- Black/white with white backsheet
- Cable cross section size 4mm
- 15 Year product warranty
- 25 Year linear power output warranty

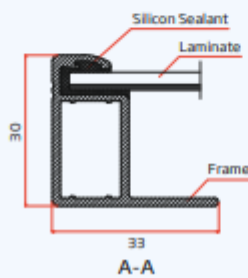
DIMENSIONS OF PV MODULE (mm)



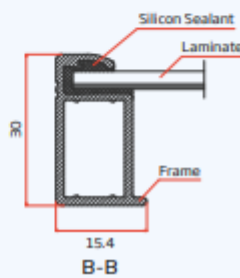
Front View



Rear View



A-A



B-B

Cable Length	1100mm
Cable Type	4mm ² Solar
Colour	Black/White
Connection Socket	Twist Lock
Depth	30mm
Dimensions	(L)1762 mm x (W)1134 mm x (D)30 mm
Frame Type	Anodized Aluminium
Glass Type	Tempered Glass
Guarantee	15 Years
Length	1762mm
Number of Cells	144
Packaging Types	Each
Power Rating	425W
Product Range	Vertex S
Standards	IEC 61215 , IEC 61730 , IEC 60701 , IEC 62716
Supplied With	3 Diode IP68 junction box
Temperature Range	-40 - +85°C
Type	Monocrystalline
Unspsc V18	32111701
Weight	21kg
Width	1134mm

Multiple rows of aesthetic black modules, installed on the same plane, present a uniform and consistent almost-all-black effect, regardless of the roof type and angle of inclination, perfectly blend with the building and the surroundings. To deliver an all-around black experience, Trina Solar has also adopted an outdoor installation scenario-specific evaluation method to inspect precisely.

With the arrival of the upgraded Vertex S Aesthetic Module in Europe, Australia, Japan and elsewhere it has been used extensively in distributed solar PV projects. Since the module was launched in 2020 it has been installed on countless rooftops worldwide. The product, being highly

efficient with a black and aesthetic look, has set a global trend in integrating solar power with a tech-savvy and aesthetic experience. A quick uptake in global markets has, in turn, reinforced the Trina Solar's positioning as the leader in truly aesthetic black modules.

As defined by Trina Solar, an aesthetic black module should, following the single, rigorous principle, be as close to full black with zero colour difference as possible, and deliver an all-around tech-savvy and aesthetic experience in various application scenarios. To this end it needs to ensure high uniformity between all cells, between cells and frames and between modules, even under different installation angles. Only by doing so can the solar roofs finally produce a unified visual effect, which guarantees integrity, an essential element in building exterior design, and delivers to customers an almost-all-black aesthetic solar roof in a real sense.

An ingenious masterpiece of exquisite packaging

Trina Solar's aesthetic concepts are not only reflected in its products, but also applied in its exploration of packaging. Its newly upgraded pure black packaging design is consistent with the black appearance of the module. With the industry's first scenario-based packaging solution, the Vertex S Aesthetic Module provides customers with an all-around aesthetic experience that runs through pickup, unpacking and use.

The Vertex S Aesthetic Module delivers a humanistic and aesthetic experience that is achieved through a combination of demanding processes and exacting standards over the black cells, frames, back sheets, labels, bus bars and glass, etc.

Aesthetic glass: Trina Solar has innovatively developed and applied the double layer ARC (antireflection coating) glass technology that delivers a more consistent black effect to solar modules and reduces glass reflection. The LAB colour mode has been introduced to measure and manage the aesthetic solar module to precisely control the chromatic values to appear more colourless, transparent, and pure, thus greatly enhancing the aesthetic effect.

Uniformity: The Vertex S Aesthetic Module also features strict control over the uniformity of black chromaticity. The black frame and back sheet make for a seamless and scratch-free appearance, thus ensuring high stability and consistency in hue, brightness and uniformity.

In October, Trina Solar, led by the China Photovoltaic Industry Association, developed a group standard in terms of coating chromaticity after deep discussion with third-party experts, leading the industry by establishing the colour specifications and uniformity criteria for the aesthetic black solar modules.

Leading - edge Technology

High Yields

- ▶ Power rating up to 80kW
- ▶ Max. efficiency up to 99%
- ▶ 6 MPPTs, fits to hilly ground and larger rooftop

Smart

- ▶ DC and AC power supply, 24h monitoring
- ▶ Smart string I-V diagnosis, active string problem detective

Safe&Reliable

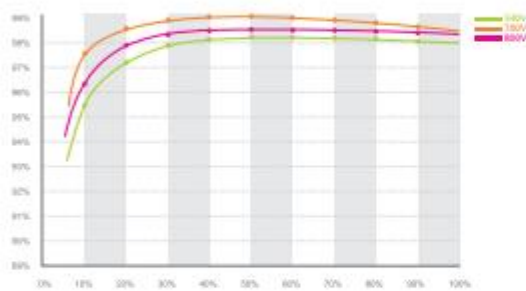
- ▶ Type II surge arrester for both DC and AC
- ▶ Anti-PID and AFCI function optional
- ▶ IP65 protection degree

Easy Maintenance

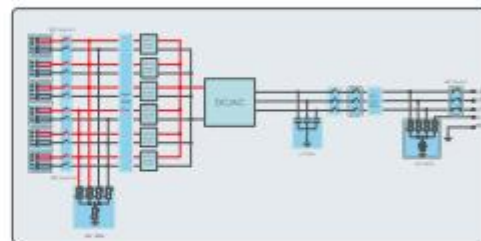
- ▶ 12 strings intelligent monitoring, and fast trouble-shooting
- ▶ Smart local and remote maintenance, saving service time and cost



MAX 80KTL3 LV efficiency



MAX 50-80KTL3 LV topology



GROWATT NEW ENERGY TECHNOLOGY Co.,LTD

A: No.28 Guangming Road, Longteng Community, Shiyan, Baoan District, Shenzhen, P.R.China.

T: + 86 755 2747 1900

F: + 86 755 2749 1460

E: info@ginverter.com

Datasheet	MAX 50KTL3 LV	MAX 60KTL3 LV	MAX 70KTL3 LV	MAX 80KTL3 LV
Input Data				
Max. DC power	65000W	78000W	91000W	104000W
Max. DC voltage	1100V	1100V	1100V	1100V
Start Voltage	250V	250V	250V	250V
PV voltage range	200V-1000V	200V-1000V	200V-1000V	200V-1000V
Nominal voltage	585V	585V	600V	685V
Full load DC voltage range	500V-850V	520V-850V	600V-850V	685V-850V
Max. input current per MPPT	25A	25A	25A	25A
Number of MPP trackers / strings per MPP tracker	6/2	6/2	6/2	6/2
Output (AC)				
Rated AC output power	50000W	60000W	70000W	80000W
Max. AC apparent power	55500VA	66600VA	77700VA	88800VA
Max. output current	80.5A	96.6A	112.7A	128.8A
AC nominal voltage	230V/400V	230V/400V	230V/400V	230V/400V
AC grid frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
Power factor	0.8leading ...0.8lagging	0.8leading ...0.8lagging	0.8leading ...0.8lagging	0.8leading ...0.8lagging
THDi	<3%	<3%	<3%	<3%
AC grid connection type	3W+N+PE	3W+N+PE	3W+N+PE	3W+N+PE
Efficiency				
Max. efficiency	99%	99%	99%	99%
Euro - eta	98.5%	98.5%	98.5%	98.5%
MPPT efficiency	99.9%	99.9%	99.9%	99.9%
Protection Devices				
DC reverse polarity protection	yes	yes	yes	yes
DC Switch	yes	yes	yes	yes
DC Surge protection	Type II	Type II	Type II	Type II
Ground fault monitoring	yes	yes	yes	yes
Output short circuit protection	yes	yes	yes	yes
AC Surge protection	Type II	Type II	Type II	Type II
String fault monitoring	yes	yes	yes	yes
Anti-PID protection	opt	opt	opt	opt
AFCI protection	opt	opt	opt	opt
General Data				
Dimensions (W / H / D)	860/600/300mm	860/600/300mm	860/600/300mm	860/600/300mm
Weight	82kg	82kg	82kg	82kg
Operating temperature range	-25°C ... +60°C	-25°C ... +60°C	-25°C ... +60°C	-25°C ... +60°C
Noise emission (typical)	≈55dB(A)	≈55dB(A)	≈55dB(A)	≈55dB(A)
Self-Consumption	< 1W*	< 1W*	< 1W*	< 1W*
Topology	Transformerless	Transformerless	Transformerless	Transformerless
Cooling concept	Smart cooling	Smart cooling	Smart cooling	Smart cooling
Environmental Protection Rating	IP65	IP65	IP65	IP65
Altitude	4000m	4000m	4000m	4000m
Relative Humidity	0-100%	0-100%	0-100%	0-100%
Features				
Display	LED/WIFI+APP	LED/WIFI+APP	LED/WIFI+APP	LED/WIFI+APP
Interfaces: USB/R485/GPRS	yes / yes / opt	yes / yes / opt	yes / yes / opt	yes / yes / opt
Warranty: 5 years / 10 years	yes / opt	yes / opt	yes / opt	yes / opt
Certificates and Approvals				

CQC, CE, VDE 0126-1-1, UTE C 15-712, VDE-AR-N4105, EN50438, DRRG, CEI 0-16, BDEW, IEC 62116, IEC61727, IEC 60068, IEC 61683, AS 4777

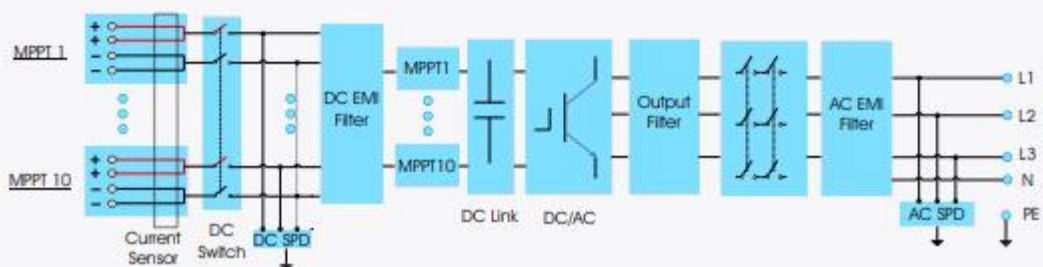
* If use AC power supply, self-consumption at night <25W

MAX 100~125KTL3-X LV

- 10 MPPTs fusefree design
- Smart I/V scan and diagnosis
- Intelligent string monitoring
- AC&DC type II SPD
- IP66 protection



Topology Diagram



Datasheet	MAX 100KTL3-X LV	MAX 110KTL3-X LV	MAX 120KTL3-X LV	MAX 125KTL3-X LV
Input data (DC)				
Max. DC voltage			1100V	
Start voltage			195V	
Nominal voltage			600V	
MPP voltage range			180V-1000V	
No. of MPP trackers			10	
No. of PV strings per MPP tracker			2	
Max. input current per MPP tracker			32A	
Max. short-circuit current per MPP tracker			40A	
Output data (AC)				
AC nominal power	100000W	110000W	120000W	125000W
Max. AC apparent power	110000VA	121000VA	132000VA	137500VA
Nominal AC voltage (range*)	220V/380V, 230V/400V (340-440V)			
AC grid frequency (range*)	50/60 Hz(45-55Hz/55-65 Hz)			
Max. output current	158.8A@400V 167.1A@380V	174.6A@400V 183.8A@380V	190.5A@400V 200.5A@380V	198.5A@400V 208.9A@380V
Adjustable power factor	0.8leading ...0.8lagging			
THD	< 3%			
AC grid connection type	3W/N/PE			
Efficiency				
Max. efficiency	98.8%			
European efficiency	98.4%	98.5%	98.5%	98.5%
MPPT efficiency	99.9%			
Protection devices				
DC reverse polarity protection	Yes			
DC switch	Yes			
AC/DC surge protection	Type I / Type II			
Insulation resistance monitoring	Yes			
AC short-circuit protection	Yes			
Ground fault monitoring	Yes			
String detection	Yes			
Anti PID function	Optional			
Arc fault detection (AFCI)	Optional			
General data				
Dimensions (W / H / D)	970/640/345mm			
Weight	84kg			
Operating temperature range	-30°C ... +60°C			
Nighttime power consumption	< 1W			
Topology	Transformerless			
Cooling	Smart air cooling			
Protection degree	IP66			
Relative humidity	0-100%			
Altitude	4000m			
DC connection	H4/MC4 (Max.6mm ²)			
AC connection	Cf Terminal (Max. 240mm ²)			
Display	LED/WIFI + APP			
Interfaces: RS485 / USB /PLC/GPRS/4G/WIFI	Yes/Yes/Optional/Optional/Optional/Optional			
Warranty: 5 years / 10 years	Yes /Optional			
CE, UKCA, IEC62116, IEC61727, CQC, VDE0126, VFR2019, EN50549-1/-2, C10/C11, UNE206007, G99 CEI 0-21/0-16, N4105, UNE206006, MEA, PEA, KSC8565				

* The AC voltage range and frequency range may vary depending on specific country grid standard.
All specifications are subject to change without notice.

POLICY

Following the Examination of the proposed new Local Development Plan (LDP), as recommended by the Reporter, policy ED9 – Renewable Energy Development confirms Scottish Borders Council will produce this SG and submit it to Scottish Ministers within 12 months of the adoption of the new Plan. The new Plan was adopted on 12th May 2016.

National planning policy and guidance promotes and supports renewable energy to facilitate the transition to a low carbon economy. The Climate Change (Scotland) Act 2009 requires all public bodies to contribute to the emissions targets in the Act and to deliver the Government's climate change programme. The need to mitigate the causes of climate change and the need to adapt to its short- and long-term impacts should be taken into account in all decisions within the planning process.

National Planning Framework 3 and SPP are supportive of promoting renewable energy and identify the need to support other key sustainability principles of social, economic and environmental considerations.

Scottish Borders Council has been proactive in supporting a range of renewable energy types. In implementing statutory duties to support both renewable energy and protect the landscape and the environment, the Council seeks a balance between these objectives within the decision-making process.

NATIONAL POLICY

NATIONAL PLANNING FRAMEWORK 3 (NPF3)

National Planning Framework 3 is a longer-term spatial expression of the Government Economic Strategy. One of the principal thrusts of this strategy for Scotland is the promotion and support for increasing sustainable economic growth. It promotes renewable energy; expressing delivery targets to be achieved and recognises the need to support sustainability principles of protecting the landscape and the environment. SCOTTISH PLANNING POLICY (SPP) Scottish Planning Policy is supportive of renewable energy and identifies the requirement to promote key other sustainability principles of social, economic and environmental issues.

Paragraph 154 of SPP requires planning authorities, through their development plan,

- to support the development of a diverse range of electricity generation from renewable energy technologies - including the expansion of renewable energy generation capacity
- to guide development to appropriate locations and to advise on the issues that will be taken into account when specific proposals are being assessed

SPP seeks to ensure the full potential for renewable energy generation is achieved whilst at the same time giving due regard to environmental, community and cumulative impacts. SPP does not single out any sustainable types to have extra weighting over others. Paragraph 28 states that the planning system should “achieve the right development in the right place: it is not to allow development at any cost”.

REGIONAL POLICY

STRATEGIC DEVELOPMENT PLAN 2013

Policy 10 – Sustainable Energy Technologies is a high-level policy which states that the Strategic Development Plan seeks to promote sustainable energy sources. It requires that Local Development Plans will:

Set a framework for the encouragement of renewable energy proposals that aims to contribute towards achieving national targets for electricity and heat, taking into account relevant economic, social, environmental and transport considerations, to facilitate more decentralised patterns of energy generation and supply and to take account of the potential for developing heat networks.

LOCAL POLICY

SCOTTISH BORDERS ADOPTED LOCAL DEVELOPMENT PLAN 2016

Renewable energy is a wide-ranging subject and many LDP policies need to be considered during the application processing period. However, the most relevant is policy ED9 – Renewable Energy Development.

Policy ED9 in essence is supportive of a wide range of renewable energy types provided that there are no unacceptable significant adverse impacts or effects which cannot be mitigated. If there are then development will only be approved if the Council is satisfied that the wider economic, environmental and other benefits of the proposal outweigh the potential damage arising from it.

NATIONAL ENERGY TARGETS

Scottish Planning Policy and Electricity Generation Policy Statement sets out the Scottish Government’s current position regarding renewables.

Paragraph 154 of SPP states that the planning system should support the transformational change to a low carbon economy, consistent with national objectives and targets, including deriving:

- 30% of overall energy demand from renewable sources by 2020.
- 11% of heat demand from renewable sources by 2020; and

- the equivalent of 100% of electricity demand from renewable sources by 2020; There is no cap on these targets and the Council must therefore continue to support renewable energy proposals within appropriate locations. Progress on renewables approvals and implementations can be viewed on the Scottish Government's Energy Statistics for Scotland. (Please see reference to Scottish Energy Strategy: the future of energy in Scotland below regarding further updated energy targets).

UpToDate National Policy

Scotland's ambitious climate change legislation sets a target date for net zero emissions of all greenhouse gases by 2045. Our contribution to climate change will end, definitively, within one generation.

To meet Scotland's targets, a rapid transformation across all sectors of our economy and society is required. We published our [Climate Change Plan update](#) in December 2020 which reflects the increased ambition of the new targets set by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

Our [Net Zero Nation](#) website is a 'one stop shop' for individuals, communities and organisations looking for information about what they can do to tackle the climate emergency, and learn more about the action that all of Scotland is taking.

Photograph Appendix



Image showing West facing elevation of the factory.



Image showing the North facing elevation of the factory.



Image showing North-West corner of the factory.



Image showing the South-East corner of the factory



Image showing East facing elevation of the factory



Image showing the South Facing elevation of Shed 5 factory onto Eyemouth Industrial Estate.

Conclusion

The applicant is under pressure from the food industry to reduce the carbon footprint and the reliance on grid generated energy in the fishing industry. This project is being supported by the Governments Marine Management Organisation under the heading of M2 Improving energy efficiency of fishing and mitigating climate change. Also under the heading M16 of improving the value and quality of fisheries products.

It is with the above in mind and creating a situation where an equivalent of 2/3rds of the daytime energy can be generated and part consumed and the balance sent into the local network to reduce the carbon effect of generation that we ask that the authority approve this application.